

Investigate This!
My (Post) Philosophy of Teaching and Learning Mathematics

“Education is not the filling of a pail, but the lighting of a fire.” –**William Butler Yeats**

With mention of the term “mathematics” typically comes one of the three reactions: “I am not good at math”, “math is my worst subject”, or my personal favorite, “I am not smart enough to do math”. My motive, as a math teacher, is to challenge the stigmas associated with mathematics and help students discover the true essence of the topic.

My biggest pedagogical feat as a mathematics teacher is helping students regain confidence in their ability to do mathematics. By removing the recall methods used in secondary classrooms and replacing them with reasoning, my pedagogy in teaching mathematics involves motivating students to focus on *why* math works rather than *how* to do it. Authentic learning of mathematics involves logic, creativity, and ownership of ideas. Through student-centered instructional models and allowing students to explore their thoughts through writing and critical thinking tasks, I will encourage students to become active learners in developing and understanding authentic mathematics. By working with the raw mathematics, rather than being led through textbook problems, my students’ understanding of mathematics will broaden as their confidence and understanding of the subject evolves. Allowing students to become the pilots of their learning will solidify concepts, increase appreciation, and guarantee retention.

Having my students take charge of their own learning is a risk. For me, the biggest worry is ensuring that my students accurately understand the content. Fortunately, investigatory learning and student-centered activities, especially in the form of writing and other formative assessment, provide indicators of students understanding and success in accurately understanding the content. I will use various strategies of this form to gauge whether or not students understand the content. To further monitor students understanding, “checkpoints” that ask students to explain their reasoning justify their result will be used. At the end of each lesson, summative assessment will be used to provide appropriate closure and encourage students to apply the content in a way that ensures that the material has been mastered.

In this investigatory design, technology will be a pivotal tool in both my teaching and my students’ understanding of mathematical content. In enacting my pedagogy, I will remove skepticisms related to math by introducing ideas to students through the TPACK and SAMR models to adjust instruction to allow students to confront material using a hands-on approach.

These models will be used to pique curiosity and assist students' learning of content by using technology to increase productivity, explore concepts, and confirm results. Using technology will require that students understand the underlying components of the problem, reinforcing my pedagogical pursuit.

Teaching mathematics successfully involves three essential components: content knowledge, pedagogy, and technology. The balance of these three elements induces the "lighting of the fire, rather than the filling of a pail" when educating students. Though a critical part of teaching, balancing this trio is not up to me. As active participants of learning, it is up to my students indicate what they need in order to learn the material. Pedagogy, content, and technology will be emphasized until students engage in learning mathematics themselves. Once students engage in active participation, students will be granted the freedom to create their own balance. This balance is solely dependent on the students, their needs, skill levels, and attitudes towards mathematics. As a teacher, I will do my best to balance the three to create an effective and successful learning experience for my students. After all, I am simply a facilitator of learning: my students know how to light their educational flame, not me.